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sorbs oxygen and glows with formation of the black trioxide and blue tetroxide till it at last attains its maximum degree of oxidation. The specific gravity of metallic vanadium at 15° is 5·5. It is not soluble in either hot or cold hydrochloric acid; strong sulphuric acid dissolves it on heating, giving a yellow solution; hydrofluoric acid dissolves it slowly with evolution of hydrogen; nitric acid of all strengths acts violently on the metal, evolving red nitrous fumes and yielding a blue solution; fused with sodium hydroxide the metal dissolves with evolution of hydrogen, a vanadate being formed.

One sample yielded on oxidation a percentage increase of 77·94, whereas that calculated from metal to pentoxide is 77·98. Another preparation gave a percentage increase of 70·8, showing the presence of a small quantity of oxide. On treatment in a current of chlorine metallic vanadium burns and forms the reddish black tetrachloride; heated in a current of pure nitrogen the mononitride is formed.

The properties of the compounds of vanadium with silicon and platinum are then described in the memoir.

XX. "On *Palæocoryne*, a genus of the Tubularine Hydrozoa from the Carboniferous formation." By Dr. G. MARTIN DUNCAN, F.R.S., Sec. Geol. Soc., and H. M. JENKINS, Esq., F.G.S. Received June 14, 1869.

(Abstract.)

Palæocoryne is a new genus containing two species, and belongs to a new family of the Tubulariæ. The forms described were discovered in the lower shales of the Ayrshire and Lanarkshire coal-field, and an examination of their structure determined them to belong to the Hydrozoa, and to be parasitic upon Fenestellæ. The genus has some characters in common with *Bimeria* (St. Wright), and the polypary is hard and ornamented. The discovery of the trophosome, and probably part of the gonosome of a tubularine Hydrozoon in the Palæozoic strata brings the order into geological relation with the doubtful Sertularian Graptolites of the Silurian formation, and with the rare medusoids of the Solenhofen stones.

XXI. BAKERIAN LECTURE.—"On the Continuity of the Gaseous and Liquid States of Matter." By THOMAS ANDREWS, M.D., F.R.S., &c. Received June 14, 1869.

(Abstract.)

In 1863 the author announced, in a communication which Dr. Miller had the kindness to publish in the third edition of his 'Chemical Physics,' that on partially liquefying carbonic acid by pressure, and gradually raising at the same time the temperature to about 88° Fahr., the surface of de-